

Problem G. Repetitive Elements

Input file: standard input
Output file: standard output
Time limit: 3 seconds
Memory limit: 1024 megabytes

The genome is a sequence with four nucleic acids, **A**, **T**, **C**, and **G**. Repetitive elements inside the genome are patterns of nucleic acids that occur in multiple copies throughout the genome without overlapping. For example, given a toy genome, $S = \text{TATCGATCGAG}$, there are a couple of repeat elements where $R = \text{ATCG}$ is the longest repetitive element appearing in TATCGATCGAG and TATCGATCGAG instead of **ATCGA**, whose two appearing positions overlap. Your task is to identify the longest repetitive element R inside the given genome sequence, S .

Input

The first line contains an integer T , which represents the number of test cases. Each test case is a genome sequence, S .

Constraints

- $1 \leq T \leq 50$.
- S is the sequence of the alphabet $\Sigma = \{\text{A}, \text{T}, \text{C}, \text{G}\}$.
- $15 \leq |S| \leq 100$.
- If there are multiple longest repetitive elements, please output the one appearing first (i.e., **CTT** instead of **ATG** in the fifth test case).

Output

Each test case outputs R , a string corresponding to the longest repetitive element for the given genome, S .

Examples

standard input	standard output
5	ATCG
TATCGATCGAGTTGT	GCGA
TCCGCGAGCGAGTCTCTCCATT	CATACG
GTTTCATCATACGAGGCCCCATACGCGCTGG	GAT
AGATGGGATCCTTATG	CTT
GCCCTTAGGCATGGGATGTCGTTTCTTG	